

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2018/2019

TIC3251 – DECISION SUPPORT SYSTEMS

(All sections / Groups)

12th MARCH 2019
9.00 AM – 11.00 AM
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 4 pages with 5 Questions only excluding the cover page
2. Attempt **ALL** questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please write all your answers in the Answer Booklet provided.

QUESTION 1

- (a) MyStock is a software that is used in Company ABC to manage its inventory. The core business of Company ABC is selling shoes. Given the following capabilities of MyStock, define the phrases in *italics* and provide **ONE** possible output that can be generated from it. [2 + 2 + 2 marks]
- (i) MyStock supports *descriptive analytics*.
 - (ii) MyStock supports *predictive analytics*.
 - (iii) MyStock supports *prescriptive analytics*.
- (b) Suppose that Mr. Chia is a new manager in your organization. Under what circumstances is he known as an *efficient* decision maker? [2 marks]
- (c) Provide **TWO** examples of standard and well-known evaluation methods that can be used to determine decision styles. [2 marks]

QUESTION 2

- (a) Define metadata and describe the importance of including metadata in data warehouse. Provide **ONE** example of metadata. [3 marks]
- (b) What is the objective of applying discrete event simulation to model systems? Provide **ONE** example of application of discrete event simulation to model a system. [2 marks]
- (c) How is throwaway prototyping similar to both *prototyping* and the *traditional System Development Life Cycle (SDLC)*? [2 marks]
- (d) Describe **THREE** key components of a business performance management. [3 marks]

CONTINUED ...

QUESTION 3

A convocation ceremony for a group of graduating students will be held next month, and a souvenir shop is planning to have promotions on its products. The shop has 500 teddy bears, 400 balloons and 600 bars of chocolates and the employees of the shop would like to pack them into two different packages. The first package is priced at RM50 and it contains 1 teddy bear, 3 balloons and 2 bars of chocolates. The second package is priced at RM100 and it contains 3 teddy bears, 4 balloons and 3 bars of chocolates. The shop would like to gain maximum profit from the sales of the two packages during the convocation day.

Suppose that linear programming is recommended to design the model that can be used for decision making.

- (a) Based on the above scenario, identify the decision variable(s) and represent the decision variable(s) using symbols. [1 mark]
- (b) Based on the above scenario, identify the result variable and represent it using symbol. Write an equation that shows the mathematical relation between result variable and decision variables. [3 marks]
- (c) Using the symbols that are defined in Question 3(a) and Question 3(b), list the constraints. [4 marks]
- (d) Is it essential for linear programming to have a set of input consisting of decision variables, result variable and constraints to solve any business problems? Justify your answer. [2 marks]

QUESTION 4

- (a) Prior to applying a classification technique, simple split is an estimation methodology that is applied to the data. Describe the simple split methodology. If you are given 900 rows of data, what is the outcome when simple split is applied? [3 marks]
- (b) What is the role of sensitivity analysis in Artificial Neural Networks (ANN)? Describe the basic procedure of applying sensitivity analysis to an ANN model. [3 marks]
- (c) Differentiate between causal and conditional knowledge. Provide examples to support your description. [4 marks]

CONTINUED ...

QUESTION 5

Read the following case study and answer the questions.

Big Data Analytics Helps Luxottica Improvement Its Marketing Effectiveness

Based in Mason, Ohio, Luxottica Retail North America (Luxottica) is a wholly owned retail arm of Milan-based Luxottica Group S.p.A, the world's largest designer, manufacturer, distributor and seller of luxury and sports eyewear. Employing more than 65,000 people worldwide, the company reported net sales of EUR6.2billion in 2011.

Problem - Disconnected Customer Data

Nearly 100 million customers purchase eight house brands from Luxottica through the company's numerous websites and retail chain stores. The big data captured from those customer interactions (in the form of transactions, click streams, product reviews, and social media postings) constitutes a massive source of business intelligence for potential product, marketing, and sales opportunities.

Luxottica, however, outsourced both data storage and promotional campaign development and management, leading to a disconnect between data analytics and marketing execution. The outsource model hampered access to current, actionable data, limiting its marketing value and the analytic value of the IBM PureData system for Analytics application that Luxottica used for a small segment of its business.

Luxottica's competitive posture and strategic growth initiatives were compromised for lack of an individualized view of its customers and an inability to act decisively and consistently on the different types of information generated by each retail channel. Luxottica needed to be able to exploit all data regardless of source or which internal or external application it resided on. Likewise, the company marketing team wanted more control over promotional campaigns, including capacity to gauge campaign effectiveness.

Solution – Fine-tuned Marketing

To integrate all data from its multiple internal and external application sources and gain visibility into its customers, Luxottica deployed the Customer Intelligence Appliance (CIA) from IBM Business Partner Aginity LLC.

CIA is an integrated set of adaptable software, hardware, and embedded analytics built on the IBM PureData System for Analytics solution. The combined technologies helped Luxottica highly segment customer behavior and provide a platform and smart database for marketing execution systems, such as campaign management, email services and other forms of direct marketing.

IBM® PureData™ for Analytics, which is powered by Netezza data warehousing technology, is one of the leading data appliances for large-scale, real-time analytics. Because of its innovative data storage mechanisms and massively parallel processing capabilities, it simplifies and optimizes performance of data services for analytic applications, enabling very complex algorithms to run in minutes, not hours or days, rapidly delivering invaluable insight to decision makers when they need it.

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The IBM and Aginity platform provides Luxottica with unprecedented visibility into a class of customer that is of a particular interest to the company; the omni-channel customer. This customer purchases merchandise both online and in-store and tends to shop and spend more than web-only or in-store customers.

"We've equipped their team with tools to gain a 360-degree view of their most profitable sales channel, the omni-channel customers, and individualize the way they market to them," says Ted Westerheide, chief architect for Aginity. "With the Customer Intelligence Appliance and PureData system for Analytics platform, Luxottica is a learning organization, connecting to customer data across multiple channels and improving marketing initiatives from campaign to campaign."

Benefits

Successful implementation of such an advanced big data analytics solution brings about numerous business benefits. In the case of Luxottica, the top three benefits were:

- Anticipates a 10 percent improvement in marketing effectiveness
- Identifies the highest-value customers out of nearly 100 million
- Targets individual customers based on unique preferences and histories

Source: IBM Customer Case, "Luxottica anticipates 10 percent improvement in marketing effectiveness" (accessed Oct 2013)

- (a) Identify the data that was valuable to Luxottica. Why was the data valuable to Luxottica? [2 marks]
- (b) Describe **THREE** problems that were faced by Luxottica. [3 marks]
- (c) Identify the proposed solution and its capabilities to assist Luxottica to solve the problems as in Question 5(b). [2 marks]
- (d) What are the **THREE** benefits of implementing the proposed solution in Luxottica? [3 marks]

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